

What is claimed is:

1. A printing device comprising:

a judging unit for judging whether a service life of a loaded developing agent cartridge has expired; and

5 an operation mode setting unit for setting up its own operation mode to a safety mode in order to prevent printing troubles when said judgment unit determines that the service life of said developing agent cartridge has expired.

2. A printing device described in claim 1, further
10 comprising:

a consumption information reading unit for reading consumption information that represents the degree of consumption of said developing agent cartridge at the present time stored in a memory unit of said developing agent cartridge,
15 wherein

said judgment unit determines whether the service life of said developing agent cartridge has expired by comparing the consumption information of said developing agent cartridge read by said consumption information reading unit
20 with preset service life information that represents the service life of said developing agent cartridge.

3. A printing device described in claim 1 wherein

said consumption information and service life information are based on a number of printed sheets, a number

of effective pixels used in forming images, or an amount of consumed developing agent.

4. A printing device described in claim 1 wherein
said safety mode is to execute a printing process with
5 an increased cleaning frequency, an increased calibration
frequency or an increased communication frequency with a
control center, or a reduced printing speed compared to those
of a standard mode.

5. A printing device described in claim 1 wherein
10 said developing agent cartridge is either a toner
cartridge or an ink cartridge.

6. A printing device comprising:
a judging unit for judging whether a service life of
a loaded developing agent cartridge has expired; and
15 an operation mode setting unit for setting up its own
operation mode to a safety mode in which a printing process
is executed with an increased cleaning frequency compared
to that of a standard mode when said judging unit determines
that the service life of said developing agent cartridge has
20 expired.

7. A printing device described in claim 6 wherein
said cleaning frequency is such that cleaning is executed
in every page of image formation.

8. A printing method comprising:

a judging step of judging whether a service life of a loaded developing agent cartridge has expired; and

an operation mode setting step of setting up its own operation mode to a safety mode in order to prevent printing troubles when said judgment step determines that the service life of said developing agent cartridge has expired.

9. A printing method described in claim 8, further comprising:

a consumption information reading step of reading consumption information that represents the degree of consumption of said developing agent cartridge at the present time stored in a memory unit of said developing agent cartridge, wherein

said judgment step determines whether the service life of said developing agent cartridge has expired by comparing the consumption information of said developing agent cartridge read by said consumption information reading step with preset service life information that represents the service life of said developing agent cartridge.

10. A printing method described in claim 8 wherein said consumption information and service life information are based on a number of printed sheets, a number of effective pixels used in forming images, or an amount of consumed developing agent.

11. A printing method described in claim 8 wherein
said safety mode is to execute a printing process with
an increased cleaning frequency, an increased calibration
frequency or an increased communication frequency with a
5 control center, or a reduced printing speed compared to those
of a standard mode.

12. A printing method described in claims 8 wherein
said developing agent cartridge is either a toner
cartridge or an ink cartridge.

10 13. A printing method comprising:
a judging step of judging whether a service life of a
loaded developing agent cartridge has expired; and
an operation mode setting step of setting up its own
operation mode to a safety mode in which a printing process
15 is executed with an increased cleaning frequency compared
to that of a standard mode when said judging step determines
that the service life of said developing agent cartridge has
expired.

14. A printing method described in claim 13 wherein
20 said cleaning frequency is such that cleaning is executed
in every page of image formation.

15. A printing program for causing a printing device
to execute:

a judging step of judging whether a service life of a

loaded developing agent cartridge has expired; and

an operation mode setting step of setting up its own operation mode to a safety mode in order to prevent printing troubles when said judgment step determines that the service
5 life of said developing agent cartridge has expired.

16. A printing program described in claim 15, further causing a printing device to execute:

a consumption information reading step of reading consumption information that represents the degree of
10 consumption of said developing agent cartridge at the present time stored in a memory unit of said developing agent cartridge, wherein

said judgment step determines whether the service life of said developing agent cartridge has expired by comparing
15 the consumption information of said developing agent cartridge read by said consumption information reading step with preset service life information that represents the service life of said developing agent cartridge.

17. A printing program described in claim 15 wherein
20 said consumption information and service life information are based on a number of printed sheets, a number of effective pixels used in forming images, or an amount of consumed developing agent.

18. A printing program described in claim 15 wherein

said safety mode is to execute a printing process with an increased cleaning frequency, an increased calibration frequency or an increased communication frequency with a control center, or a reduced printing speed compared to those
5 of a standard mode.

19. A printing program described in claim 15 wherein said developing agent cartridge is either a toner cartridge or an ink cartridge.

20. A computer-readable recording medium on which the
10 printing program described in claim 15 is recorded.

21. A printing device comprising:

a judging unit for judging whether a loaded developing agent cartridge is an authorized product; and

an operation mode setting unit for setting up its own
15 operation mode to a safety mode in order to prevent printing troubles when said judgment unit determines that said developing agent cartridge is not an authorized product.

22. A printing device described in claim 21 further comprising:

20 a product information reading unit for reading product information for identifying a product of said printing device or said developing agent cartridge stored in a memory unit of said developing agent cartridge, wherein

said judging unit determines whether said developing

agent cartridge is an authorized product or not by comparing the product information read by said product information reading unit with a product information of an authorized product.

5 23. A printing device described in claim 21 wherein
said safety mode is to execute a printing process with
an increased cleaning frequency, an increased calibration
frequency or an increased communication frequency with a
control center, or a reduced printing speed compared to those
10 of a standard mode.

24. A printing device described in claim 21 wherein
said developing agent cartridge is either a toner
cartridge or an ink cartridge.

25. A printing device comprising:
15 a judging unit for judging whether a loaded developing
agent cartridge is an authorized product; and
an operation mode setting unit for setting up its own
operation mode to a safety mode in which a printing process
is executed with an increased cleaning frequency compared
20 to that of a standard mode when said judgment unit determines
that said developing agent cartridge is not an authorized
product.

26. A printing device described in claim 25 wherein
said cleaning frequency is such that cleaning is executed

in every page of image formation.

27. A printing method comprising:

a judging step of judging whether a loaded developing agent cartridge is an authorized product; and

5 an operation mode setting step of setting up its own operation mode to a safety mode in order to prevent printing troubles when said judgment step determines that said developing agent cartridge is not an authorized product.

28. A printing method described in claim 27 further
10 comprising:

a product information reading step of reading product information for identifying a product of said printing device or said developing agent cartridge stored in a memory unit of said developing agent cartridge, wherein

15 said judging step determines whether said developing agent cartridge is an authorized product or not by comparing the product information read by said product information reading step with a product information of an authorized product.

20 29. A printing method described in claim 27 wherein said safety mode is to execute a printing process with an increased cleaning frequency, an increased calibration frequency or an increased communication frequency with a control center, or a reduced printing speed compared to those

of a standard mode.

30. A printing method described in claim 27 wherein said developing agent cartridge is either a toner cartridge or an ink cartridge.

5 31. A printing method comprising:

a judging step of judging whether a loaded developing agent cartridge is an authorized product; and

an operation mode setting step of setting up its own operation mode to a safety mode in which a printing process
10 is executed with an increased cleaning frequency compared to that of a standard mode when said judgment step determines that said developing agent cartridge is not an authorized product.

32. A printing method described in claim 31 wherein
15 said cleaning frequency is such that cleaning is executed in every page of image formation.

33. A printing program for causing a printing device to execute:

a judging step of judging whether a loaded developing
20 agent cartridge is an authorized product; and

an operation mode setting step of setting up its own operation mode to a safety mode in order to prevent printing troubles when said judgment step determines that said developing agent cartridge is not an authorized product.

34. A printing program described in claim 33 further causing a printing device to execute:

a product information reading step of reading product information for identifying a product of said printing device
5 or said developing agent cartridge stored in a memory unit of said developing agent cartridge, wherein

said judging step determines whether said developing agent cartridge is an authorized product or not by comparing the product information read by said product information
10 reading step with a product information of an authorized product.

35. A printing program described in claim 33 wherein said safety mode is to execute a printing process with an increased cleaning frequency, an increased calibration
15 frequency or an increased communication frequency with a control center, or a reduced printing speed compared to those of a standard mode.

36. A printing program described in claim 33 wherein said developing agent cartridge is either a toner
20 cartridge or an ink cartridge.

37. A computer-readable recording medium on which the printing program described in claim 33 is recorded.